

Algebraic Concepts
Lesson 25: Quadratic Functions
Math for Standards

Name _____

Date _____

EQ: What are the characteristics of a quadratic function and how do you find the solutions of a quadratic function?

A quadratic equation is an equation with a highest power of _____.

Standard form of a quadratic is when the equation is equal to _____.

We need to have a quadratic in _____ in order to solve the problem.

The quickest way to solve a quadratic is to _____ it, if possible.

Rewrite quadratics to the form $y = ax^2 + bx + c$ to _____ them.

This graph is the U-shaped curve known as a _____.

Each parabola will either open _____ or _____. It will open up when a is _____ and down when a is _____.

Each parabola will have a _____ or _____. There will be a maximum when the parabola opens _____ and a minimum when it opens _____.

The maximum or minimum occurs at the _____ of the parabola.

The _____ goes through the vertex. This axis is the line that you can fold the graph over on top of itself. Equation:

The _____ () is the largest possible number/variable combination that can be “divided out” of each term.

Difference of two squares:

As a last resort, you can always solve a quadratic by using the quadratic formula:

Factoring a quadratic: $x^2 - 9x + 18 = 0$

Steps:

Example 1: Solve and check.

a. $m^2 - m = 30$

b. $3x^2 - 18x = 21$

c. $r(r + 5) = 15$

d. $t^2 + 29t + 210 = 0$

Example 2: Determine whether the parabola opens up or down. Then find the equation for the axis of symmetry.

a. $y = x^2 - 9$

b. $y = -2x^2 - 4x + 3$

c. $y = -3x^2 + 6x - 8$

d. $y = x^2 - 6x$

Example 3: An object is dropped from a height of 1000 feet. The equation $h = -16t^2 + 1000$ gives the height h of an object in freefall after t seconds. How much sooner will this object hit the ground before an identical object dropped from 2000 feet?